Meeting Summary
Seismic Safety Committee (SSC)

February 7, 2002

Summary

- SSC input to seismic information is complete for the Hazard Mitigation Strategy Plan update
- Subcommittees are progressing toward mid-May completion of rewrite to *A Policy Plan for Improving Earthquake Safety in Washington*
- Three action items were approved:
  1. Recommend that SSC support HB #1555 position on building codes
  2. Recommend that Information and Technology (IT) subcommittee address communication infrastructure survivability and enhanced use of IT for seismic information
  3. Move that SSC staff proceed with a proposed concept for identifying a mechanism for funding Washington state seismic network operations.

Meeting Agenda

The purpose of this half-day meeting was to review the following:

- Status of Hazard Mitigation Strategy Plan for seismic information
- Progress of subcommittees updating *A Policy Plan Improving Earthquake Safety in Washington*
- Presentation on status of earthquake monitoring in Washington state

Glen Woodbury, SSC Vice Chair, opened the meeting. He asked for and received approval of the August 30, 2001 meeting minutes with the following correction:

- Under "**Insurance Concerns**," (p. 6) the line that reads "*An applicant can request an insurance waiver at the time they make their application*," is corrected to read:

  "*An applicant can request an insurance waiver **prior to the final** payment.*"

Hazard Mitigation Strategy Update

George Crawford, EMD Technical Advisor

The Hazard Mitigation Strategy Plan update will provide the latest earthquake mitigation strategy to reduce the seismic hazard in Washington State. The plan will be available in draft February 28. That document will go back to the full EMC later this year. George thanked the SSC for its help in drafting the earthquake portion of the plan. While a small section of the plan overall, the earthquake information is a good overview of the state's priorities for reducing future losses.

Committee Updates

Subcommittees responsible for updating the Seismic Safety Plan discussed their progress to date. Subcommittee chairs, or their stand-ins, discussed meetings, membership, and problems.

Structures/Ken Korshaven City of Lynnwood

- **Meetings**: The Structures subcommittee has met 2 times. The group recommended at its last meeting that people serving on a specific task last time do so again. The next meeting is February 21.
- **Membership**: The challenge is to find people to sit on the subcommittee, which has less participation than needed. The subcommittee's scope is expanded from that of the 1991 and 1998 plans. Ken has added lifelines liaison, environmental, county and city representation. And he has attempted to add tribal input.
- **Content**: The subcommittee has expanded some areas missing from previous reports. Major areas for new information are hospitals, fire and police stations, and other government buildings.
- **Major Policy Issue.** HB 1555, now out of committee, is a major policy issue the subcommittee needs to track. The bill supports use of the new International Building Code (IBC). The National Fire Protective Association (NFPA), the firefighters union, is challenging the bill. NFPA is writing its own code that would include seismic provisions. Their opposition could delay this bill for some years. Seismic regulations under the new IBC are highly advanced, allowing much more detailed design criteria for individual sites. Washington is behind other states in moving to require the new codes, which reflect current scientific understanding.

  The bill has until February 19 to be approved in the House. If passed, the Senate would hear the bill, with a March 1 deadline to pass from committee and a March 8 deadline to pass the Senate. The following information is provided to members of the SSC and individual members may then decide to support/oppose on behalf of their organization:

  - Would adopt the IBC for most issues—but not plumbing
  - Governor Locke endorses it. Plumbers support it

- Two points are central to the debate: 1) what other states are doing and 2) whether or not current UBC is adequate for seismic and life safety.

- **Support for HB 1555.** Ken asked if the SSC could support the bill. State agencies have authority to support it. The immediate concern is whether or not the bill will pass the House. Economic issues are its impact on insurance. Jurisdictions not using it may receive minus points in their insurance ratings for not being in code. Further, without the international standard, jurisdictions could set local codes, creating inconsistency across the state.

ACTION ITEM #1: *Recommendation.* The SSC supports HB 1555 bill as beneficial to everyone. Glen Woodbury will investigate how best to present SSC's support. The Structures subcommittee is concerned that code development under the NFPA allows the regulated (architects, engineers, contractors) to serve on the committee that sets the rules. In contrast, the IBC takes input from those people, but does not allow them to set and enforce the regulations.

Procedural question: Because SSC is an advisory rather than a decision-making body, Doug Sutherland feels it is inappropriate for SSC to provide testimony in support of this bill.

Emergency Management/Karin Frinnell-Hanrahan Grays Harbor County EMD

Karin Frinell-Hanrahan represented subcommittee chair, Eric Holdeman.

- **Meetings:** The subcommittee has met to discuss the Hazard Mitigation Plan changes and updates. The next meeting meet is Monday, February 11 to review the 1991 and 1998 reports.
- **Membership:** Emergency managers, CREW members, and representatives from SAFECO currently serve on the subcommittee.

Lifelines/Craig Weaver USGS

Craig Weaver spoke for Don Ballantyne, subcommittee chair.

- **Meetings:** No meetings to date. First meeting is February 28 with two additional planned meetings one in mid-March and another meeting in late April. The April meeting will include a larger audience.

- **Membership:** Don, a licensed engineer, has agreed to be technical lead. He has in-depth knowledge of water and sewer systems along the I-5 corridor and serves on national bodies reviewing lifelines standards. The subcommittee has representation from large and small utilities and eastern Washington.

- **Content:** The subcommittee will be building upon detailed reports on how various lifelines systems performed during the Nisqually earthquake.

Information & Technology/Tony Qamar University of Washington

- **Meetings:** None yet.

- **Membership:** Steve Malone, UW seismologist, will serve on committee. The USGS may provide some expertise in geology, specifically tectonics. Hal Mofjeld will represent tsunami. Ralph Hagerud, USGS geologist, will cover emerging technologies, largely digital geology and geospatial databases. The subcommittee is looking for someone from the emergency management community to help formulate a policy on communication.
- **Content**. Tony asked the SSC to define what content his broadly labeled subcommittee will deliver. Key terms are "communications," "technology," and "information." Science has made inroads in defining hazards. The committee should examine how the state can support monitoring of earthquakes. Some key points:

  Issue: Interplay between Communications and Earthquake Information:

  1. What is current capacity? We need to make recommendations about systems

  2. How do you handle overloads? What kind of overload is there immediately after? How do you make sure that existing communication links aren't lost? The Nisqually earthquake was a cell-phone-centric event.

  3. How do we communicate with the general public? Do we need a call center to ensure redundancy? During and after an earthquake the public demands rapid information. Rapid information is a technology issue.

  Issue: "Information" Definition can mean any of the following: hazard maps, real-time data, videos, press releases, or information from a post-earthquake clearinghouse. Some issues:

  Lack of current databases. One problem with all communication during an earthquake is the inability to rapidly identify where, for example, are un-reinforced buildings with respect to ground motions. Washington state has no earthquake information center to centralize critical data sets. Recommendations for surveys to gather this information were part of 1991 report. Few data sets were developed, however. It is unclear how the state wants to be involved.

  Unclear what kind of information products are needed The subcommittee is developing this point. Should the focus be vulnerability? Is it operations or technology?

ACTION ITEM #2: *Recommendation.* The SSC recommends that the Information and Technology subcommittee do the following:

1. Assess and provide a recommendation on improvements to the communication infrastructure survivability in a seismic event, and
2. Recommend and research how to provide enhanced use of IT to improve the ability to assess collection, dissemination, and operation seismic information.

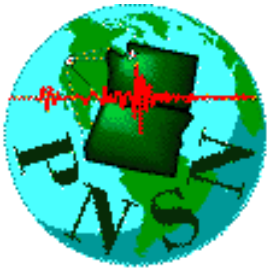
Update on Earthquake Monitoring in Washington State

Steve Malone University of Washington

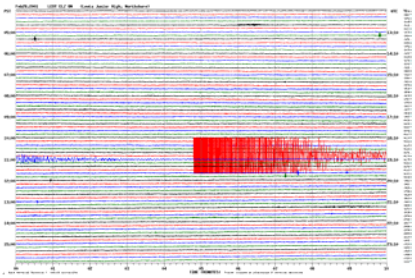
Currently, the Pacific Northwest Seismic Network (PNSN) provides seismic monitoring in Oregon and Washington. The UW is the primary operator of the PNSN. It receives assistance from the University of Oregon and Oregon State University, the USGS's Cascade Volcano Observatory and National Seismic Network in Golden, Colorado and Battelle Hanford operations.

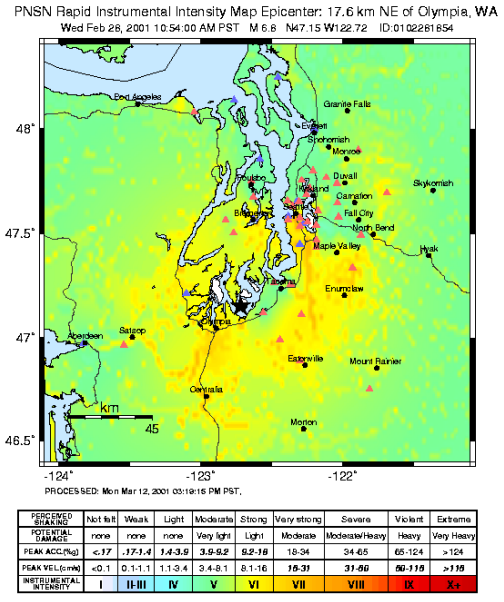
The United States is in the process of building an Advanced National Seismic System (ANSS). The goal of the new system is to provide rapid national reporting of earthquakes and to impose standards that make it easier to get this data in real-time. The PNSN will likely evolve into the Northwest Region of the ANSS. That region currently consists of Oregon and Washington and may be expanded to include western Idaho.

Current Status of PNSN



- **Stations.** 206 Real-time (RT) stations (25% in Oregon, 75% in Washington—half of those in Puget Sound area)
- **Recording.** All data is recorded on computers in Seattle located at UW
- **Regional Data.** Additional seismic stations in B.C., Montana, and California give broader regional coverage, e.g. Spokane
- **Problem.** Most stations use technology from 60s and 70s. Can provide only limited data on large earthquakes
- **Modernizing.** PNSN has ANSS funding to modernize both recording capabilities (upgrade computers, communications) and seismic stations
- **New Seismic Data Products.** PNSN has begun delivering new information products built on ANSS upgrades. Those products are:
  - SHAKEMAP (estimate of ground shaking based on new digital instruments)
  - Rapid Alert for Cascadia Earthquakes (RACE) (A pager-based fast alert on earthquakes)
  - Rapid Web site updates (available to all Web users in near RT)
  - Webicorders (provides near RT trace data to Web users)
  - Community internet intensity maps (Web-based survey of shaking effects, modeled on USGS mail survey)





PERCEIVED SHAKING	Not felt	Weak	Light	Moderate	Strong	Very strong	Severe	Violent	Extreme
POTENTIAL DAMAGE	none	none	none	Very light	Light	Moderate	Moderate/Heavy	Heavy	Very Heavy
PEAK ACC.(%g)	<.17	.17-1.4	1.4-3.9	3.9-9.2	9.2-18	18-34	34-65	65-124	>124
PEAK VEL.(cm/s)	<0.1	0.1-1.1	1.1-3.4	3.4-8.1	8.1-16	16-31	31-60	60-116	>116
INSTRUMENTAL INTENSITY	I	II-III	IV	V	VI	VII	VIII	IX	X+

- **Detailed Earthquake Databases**. PNSN has catalogs available online. For example, you can plot all earthquakes between certain dates. Seismic researchers primarily use these databases.

ANSS

- **Pilot.** Puget Sound was one of 3 pilot ANSS areas. The other two were Salt Lake City and the San Francisco Bay area.
- **Stations.** About 50 ANSS stations have been deployed in Puget Sound. Of those, 40 were running and recorded the Nisqually quake. The Nisqually event is the largest urban earthquake recorded so far by ANSS. It provides proof of concept in ANSS system design.
- **Funding.** ANSS provides funding for modern seismic stations and their installation. To date, ANSS has providing **no** funding for long-term maintenance or developing new information products. The large number of new stations and operational responsibility is straining the PNSN budget. An issue is that Washington, despite high seismic hazard in the state, does not fund operational support of PNSN.

Washington State Support for Maintenance and Information Products

- PNSN costs for 2002 are about $1.5M
- PNSN financial support for 2002 comes from the following:

UW	$825K (85% from USGS)
USGS Seattle	$300K
Battelle	$75K (100% DOE)
U of O	$60K (100% USGS)
CVO	$55K
BPA, schools, counties, cities	$100K (In kind)

- State support is about 5%. Comes only through UW budget
- Examples of other state support for seismic operations:

Alaska	$600K (67% of operating budget)
Arizona	$50K (100%. State with small hazard)
California	$5M (more than 50%)
Montana	$80K (80%)
Nevada	$200K (30%)
Tennessee	$140K (35%)

Utah $300K (50%)

ANSS Plan for Pacific Northwest

- **Area**. Oregon and Washington. Discussions underway for Idaho. Regional coordinator is Steve Malone
- **Advisory Committee**. 18 members and chaired by C.B. Crouse.
- **Operations Coordination**. Representatives of current network operators in Oregon and Washington
- **Deployment:**
    - 500 free-field strong motion (SM) stations
    - 160 broadband stations
    - Selected structures based on national guidance
    - 30-50 short period stations
    - 1 primary (UW) and 3 secondary operational centers (UofO, CVO, Hanford)
    - Up to 4 information outlets (to tailor information for state needs)

Actions Needed

- UW is requesting Washington state develop a package to fund operations in Seattle for ANSS deployment
- UW has immediate need for $60K for computer specialist
- Long-term Washington state support needed is $250K (includes $60K above)

Funding Mechanism and Revenue Source Discussion

SSC staff (Walsh and Crawford) has sketched a preliminary funding mechanism for state support for the PNSN. Their initial proposal is to recommend to EMC that a small surcharge be added to building permits to fund strong motion operations at UW. The SSC needs to approve going to the EMC to make this request, which would be for the next biennium (2003). Building permits would be used because those fees specifically benefit the building codes process.

SSC is gathering information on how this is done in California, which uses the mechanism to fund a strong motion program.

The SSC discussed the suitability of a building code fee. Korshaven noted that the state building code officials have spent years trying to get a small increase in permit fees. Doug Sutherland expressed concern about raising fees for small residential projects. The SSC was concerned that network operations need a stable income source. Building fees vary with the state of the economy. Permit fees are down about 15% in Lynnwood this year.

ACTION ITEM #3: *Motion*. The motion was made and accepted that Walsh and Crawford be authorized to proceed with a proposed concept for identifying a mechanism for funding Washington state seismic network operations.

Closing Discussion

Doug Sutherland, Chair

- Doug commented on SSC work on the *Lessons Learned* document. WSDOT's Terry Simmons took the lead. He developed a clear, accurate report that allows an easy exchange of information. It has been highly praised as a realistic accounting of the state's response to the Nisqually earthquake.

- Doug recommended that SSC meet again at a date earlier than May.

- Meeting concluded at 11:45.

SSC Meeting Participants:

Mr. Doug Sutherland, Chair (DNR)
Mr. Glen Woodbury, Vice-Chair (EMD)
Mr. George Crawford (EMD)
Dr. Terry Egan (EMD)
Mr. Bob Freitag, CREW
Ms. Karin Frinell-Hanrahan, Grays Harbor County
Mr. Chuck Hagerhjelm (EMD)
Mr. Ken Korshaven, City of Lynnwood
Mr. Jerald Lavassar, Ecology
Mr. Dan Mageau, Geoengineers/ASCE
Dr. Hal Mofjeld, NOAA
Dr. Steve Malone (UW)
Mr. Dave Nelson (EMD)
Mr. Tim Nogler (State Building Code Council)
Dr. Anthony Qamar, University of Washington
Ms. Joan Scofield, Office of the Insurance Commissioner
Mr. Terry Simmons, WSDOT
Mr. Tim Walsh, DNR
Dr. Craig Weaver, USGS
Mr. Jim Vane (Dept of Information Services)